

# MISSOURI CONSERVATIONIST

VOLUME 82, ISSUE 11, NOVEMBER 2021  
SERVING NATURE & YOU



# Discover what's **ON SALE NOW**



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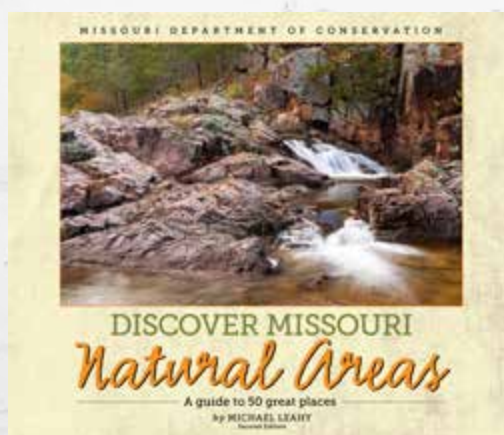
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## MISSOURI CONSERVATIONIST



### ON THE COVER

This elk is one of our staff photographer's favorite photos. See more on Page 11.

DAVID STONNER

500mm lens + 1.4 teleconverter  
f/7.1, 1/250 sec, ISO 1600

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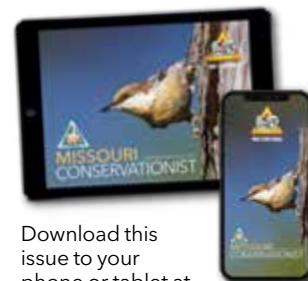
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# Inbox



## Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email [Magazine@mdc.mo.gov](mailto:Magazine@mdc.mo.gov) or write to us:

MISSOURI  
CONSERVATIONIST  
PO BOX 180  
JEFFERSON CITY, MO 65102



**CONSERVATION ART**  
I really enjoyed *The Art of Missouri's Conservation* by Brian Flowers in the August issue [Page 10]. The article was very informative, and the pictures of the murals were awesome.

Glenda Robinson  
via email



## PELICANS

I took this picture of this flock that flew over my place — 15 miles north of Trenton. I didn't really think they were geese, but it wasn't until I got the *Missouri Conservationist* that I realized they were pelicans [October, *Missouri's Visiting Pelicans*, Page 16]. That was a first for me. I just happened to have the camera with me. It was awesome to see!

Barb Stanton Princeton

## INFORMATIVE MAGAZINE

I thoroughly enjoyed picking my own adventure in the July issue [*Pick an Outdoor Adventure*, Page 10]. What a creative read! I learned how to be a scat detective in the September issue [*The Scat Detective*, Page 10]. I never knew number two came in four shapes.

Receiving the *Missouri Conservationist* is a joy. It must be even more fun to put together. Thanks for all the interesting information you provide.

Donna Jablonski Osage Beach

Thanks to all the staff of the *Missouri Conservationist* for a wonderful magazine. I look forward to each issue and read it cover to cover. There is so much good news and information and beautiful pictures. It pleases me that Missouri has such a department and such a publication.

Doris Yonker Kansas City

## A SNAKE OF A DIFFERENT COLOR

We have loved this educational and informational, beautiful magazine for many, many years.

Your photo of the rough greensnake in the October issue [back cover] inspired me to send this picture. This is one of the beautiful black snakes we have seen around our 5 acres during the last 17 years. We absolutely love them and enjoy them.

Judy Siegfried Peculiar

*We love to see photos from our readers, so get out in nature and capture what you've discovered! Remember to share your images with us on Flickr at [flickr.com/groups/mdcreaderphotos-2021/](https://www.flickr.com/groups/mdcreaderphotos-2021/), email [Readerphoto@mdc.mo.gov](mailto:Readerphoto@mdc.mo.gov), or include the hashtag #mdcDiscoverNature on your Instagram photos. —THE EDITORS*



PELICANS: BARB STANTON; BLACK SNAKE: COURTESY JUDY SIEGFRIED

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## Have a Question for a Commissioner?

Send a note using our online contact form at [mdc.mo.gov/commissioners](https://mdc.mo.gov/commissioners).



### Want to see your photos in the Missouri Conservationist?

Share your photos on Flickr at  
flickr.com/groups/mdcreaderphotos-2021,  
email Readerphoto@mdc.mo.gov,  
or include the hashtag #mdcDiscoverNature  
on your Instagram photos.



1

1 | Green-winged  
teal by **Thomas  
Swartz**, via Flickr

2 | Blackberry  
leaves by **Tim  
VandenHoek**,  
via Flickr

3 | Muskrats by  
**Michael Woods**,  
via Flickr



2



3

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# Up Front

with Sara Parker Pauley

✱ **The Buffalo Bill Museum in Cody, Wyoming, is an absolute treasure.** I spent the better part of a day there this summer, in part because of a special collection of western landscapes by artist Albert Bierstadt, who is perhaps best known for his stunning depictions of the Rockies, and his ability to combine both realism and romanticism in a single canvas.

Interestingly, Bierstadt was also a charter member of the Boone & Crockett Club (B&C), recognized as North America's first conservation group committed to conserving wildlife and wild lands. Founded by Theodore Roosevelt and writer George Bird Grinnell in 1888, B&C's founding mission focused on protecting the wildlife in Yellowstone National Park from the devastating effects of poachers.

Roosevelt and Grinnell understood that to best tell the story of Yellowstone — to elicit emotion and inspire action — they needed to convey their message through words and art. To this point, Bierstadt is perhaps most well-known for his painting *The Last Buffalo* in which he depicted the horrific reality of the time — the buffalo on the verge of extinction.

In this issue, we introduce you to two modern-day artists — MDC's Noppadol Paothong and David Stonner. With a camera as their artist's tool, they, too, know how to elicit emotion with their brilliant depictions of the magnificence of our natural world. Looking at their stunning photographs, I understand what naturalist Michael McCarthy noted, "The natural world can offer us more than the means to survive ... it can offer us joy."

*Sara Parker Pauley*

**SARA PARKER PAULEY**, DIRECTOR  
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Printed with soy ink



[mdc.mo.gov](http://mdc.mo.gov) **3**

# Nature LAB

by Dianne Van Dien

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

## FISHERIES SCIENCE

### Walleye Genetics

✳ **Physically, you can't tell that walleye in the Black River basin of southern Missouri are different from other walleye. The females of the Black River-strain walleye tend to grow larger — up to 14 pounds — and their eggs are bigger, but the real difference is found in the walleye's DNA.**

"If we didn't do this genetic work, we wouldn't know this other walleye existed," says Leah Berkman, MDC biometrician and geneticist. "This native strain would have been stocked over and it would have been lost."

MDC biologists first discovered these native walleye through genetic testing in the 1990s. In 2017, Berkman began a study that expanded that early work. Collecting samples from a larger number of walleye and using newer techniques, she created a more finely tuned picture of genetic differences among walleye in Missouri and Arkansas. In addition to examining the Black River strain, her study aims to identify other native walleye populations in these states, filling in gaps about the species' genetic distribution.



Fisheries biologists take tail-fin clippings from walleye for DNA testing as part of a study to determine the extent of genetic variation among walleye in Missouri and Arkansas.

Full-scale genetic study expands earlier findings about unique walleye in southern Missouri

Before genetic differences among walleye were known, some Ozarks streams were stocked with Great Lakes-strain walleye, which could have affected the native population. However, less than 10 percent of walleye collected from the Black River basin were nonnative. This is good news because it shows that MDC's current practice of stocking only the Black River strain in those streams has maintained that population's unique genetics.

Berkman explains that genetic diversity matters "because you don't know what the environment is going to throw at a species. The more variation it has, the more likely the species will be able to deal with things. Impacts from diseases could cripple a population with low diversity."

### Walleye Genetics at a Glance

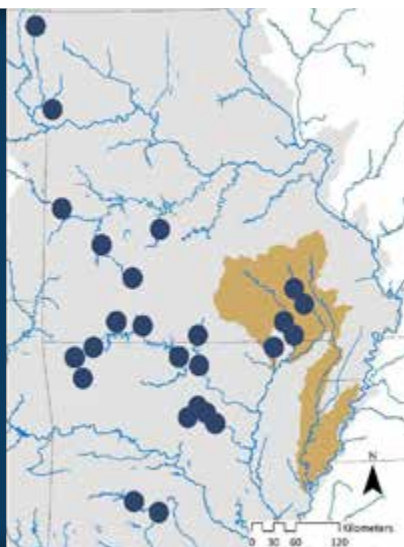
**Partners:** University of Missouri, Arkansas Game and Fish Commission, Arkansas State University

#### Methods:

- Tail-fin clippings were collected from walleye during spawning from 2017 to 2020.
- DNA sequences from the clippings were compared to DNA of Great Lakes walleye.

#### Findings:

- Genetics of Black River walleye are significantly different from those of Great Lakes walleye.
- Tributaries of the Missouri River harbor native walleye that are closely related to Great Lakes walleye.
- Black River walleye are closely related to the Highlands walleye of KY and WV and were likely isolated when glaciers altered the landscape.



Study area includes portions of the Black, White, Little Red, and Ouachita rivers and Missouri River tributaries. Blue dots indicate collection sites. Gold shows focal area for Black River-strain walleye.

# In Brief

News and updates from MDC



## PURCHASE NATIVE TREES, SHRUBS

NEED TREES AND SHRUBS FOR YOUR LANDSCAPE? GO NATIVE AT MDC'S GEORGE O. WHITE STATE NURSERY



➔ Incorporating native trees and shrubs into your landscape can help wildlife habitat and soil and water conservation while improving the appearance and value of your property. MDC's George O. White State Forest Nursery near Licking offers a variety of low-cost native tree and shrub seedlings for reforestation, windbreaks, erosion control, wildlife food and cover, and other purposes.

The nursery provides mainly one-year-old, bare-root seedlings with sizes varying by species. Seedling varieties include pine, bald cypress, cottonwood, black walnut, hickory, oak, pecan, persimmon, river birch, maple, willow, sycamore, blackberry, buttonbush, hazelnut, redbud, ninebark, spicebush, elderberry, sumac, wild plum, witch hazel, and others.

Seedlings are available in bundles of 10 or increments of 25 per species. Prices range from 34 cents to \$1 per seedling. Sales tax of 6.1 percent will be added to orders unless tax exempt. There is a \$9 handling charge for each order. Receive a 15 percent discount, up to \$20, off seedling orders with a Permit Card or Conservation ID Number.

The nursery grows millions of seedlings each year, but some species are very popular and sell out quickly. Occasionally some seedlings succumb to uncooperative weather or hungry wildlife, despite the nursery staff's best efforts.

Learn more and place orders through MDC's 2021-2022 *Seedling Order Form*. Find it at MDC regional offices and nature centers, online at [mdc.mo.gov/seedlings](https://mdc.mo.gov/seedlings), or by contacting the State Forest Nursery at 573-674-3229 or [StateForestNursery@mdc.mo.gov](mailto:StateForestNursery@mdc.mo.gov).

Place orders now through April 15, 2022. Orders will be shipped or can be picked up at the nursery near Licking from February through May.



## HONOR MISSOURIANS WHO CONTRIBUTED TO CONSERVATION

The Missouri Conservation Commission is seeking nominations for the MDC Master Conservationist Award and the Missouri Conservation Hall of Fame.

Both awards recognize citizens who make outstanding contributions to conservation. The Master Conservationist Award honors living or deceased Missourians while the Missouri Conservation Hall of Fame recognizes only deceased individuals. Those who can be considered for either honor are:

- Missourians who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry, or wildlife conservation in Missouri.
- Employees of conservation-related agencies who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry, or wildlife conservation in Missouri.

Anyone can submit a nomination, which should include a statement describing the nominee's accomplishments and a brief biography.

Criteria and nomination forms for the Master Conservationist Award are available at [short.mdc.mo.gov/Zyp](http://short.mdc.mo.gov/Zyp). Similar information for the Missouri Conservation Hall of Fame is available at [short.mdc.mo.gov/ZyG](http://short.mdc.mo.gov/ZyG).

Please submit nominations by Dec. 31 to Julie Love, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180 or email to [Julie.Love@mdc.mo.gov](mailto:Julie.Love@mdc.mo.gov).

A screening committee appointed by the MDC director meets annually to consider nominees, with the commission providing final approval.

# Ask MDC

## Got a Question for Ask MDC?

Send it to [AskMDC@mdc.mo.gov](mailto:AskMDC@mdc.mo.gov) or call 573-522-4115, ext. 3848.

### Q: What type of mushroom is this? I found it in a wooded area, bordering a creek?

➔ Commonly known as chicken of the woods or sulfur shelf (*Laetiporus sulphureus*), this mushroom is considered a choice edible. Although this is a safe and delicious mushroom, it is recommended to try only a small amount the first time.

In season from May to November, they appear in overlapping clusters on the stumps, trunks, and logs of dead or dying deciduous trees. For more information, check out *A Guide to Missouri's Edible and Poisonous Mushrooms* at [short.mdc.mo.gov/ZNf](http://short.mdc.mo.gov/ZNf).



Chicken of the woods

### Q: What type of cocoon is this?

➔ This is likely to be a woolly bear cocoon, and if it is, it will emerge as a tiger moth (*Pyrrharctia isabella*). Those stiff bristles on the cocoon are the hairs from the caterpillar's skin. They are irritating to predators



Woolly bear cocoon

while the caterpillar is moving around, and they continue to be irritating to predators during metamorphosis.

These common caterpillars are most conspicuous around the time of the first frost. There are two broods in Missouri. Isabella tiger moths overwinter as full-grown caterpillars and have a remarkable capability to withstand freezing temperatures. They pupate within cocoons made from their hairs and emerge as moths in the spring.

For more information, please visit [short.mdc.mo.gov/ZyK](http://short.mdc.mo.gov/ZyK).



Common loon

**Q: We have been enjoying a common loon on our pond in southwest Missouri. I read about the space required for them to take off. The area is wooded around the pond. Will the loon be able to take off on its own? And do loons nest in Missouri?**

➔ Common loons need anywhere from 30 yards to a quarter of a mile to takeoff, depending on the wind. They can become stranded without a considerable amount of open water for a long takeoff, such as a pond that is too small.

Loons don't nest in Missouri, likely due to a lack of abundant, secluded lake habitat with quiet, undeveloped shorelines. Loons spend most of their lives in the water, and can't walk well on land, so secluded nesting locations on the shoreline are a necessity.

Missouri's handful of large, man-made reservoirs may seem suitable for loon nesting, but they are quite limited compared to the numerous remote lakes farther north. Missouri may also be too warm for loons. For more information, visit [allaboutbirds.org/guide/Common\\_Loon](http://allaboutbirds.org/guide/Common_Loon).



## Corporal Doug Yeager

PLATTE COUNTY  
CONSERVATION AGENT

*offers this month's*

# AGENT ADVICE

Whether you hunt waterfowl, turkey, deer, or small game, the fall hunting seasons are in full swing. This year, I challenge experienced hunters to take the time and opportunity to pass their knowledge and experience to a young person who is just starting out. Teach them firearm safety, wildlife identification, hunting regulations, and respect for game. Teach them that hunting is not only about taking an animal as much as it is about the comradery of the hunt. The time I've spent hunting with family and friends created memories I will never forget. Help a young hunter create some memories that will last them a lifetime.

## What IS it?

Can you guess this month's natural wonder?

*The answer is on  
Page 8.*



# WE ARE CONSERVATION

Spotlight on  
people and partners

by Angie Daly Morfeld



## Jan and Gwen Morris

→ Jan and Gwen Morris, Imperial, dedicated their careers to teaching, spending much of their time inside a classroom. But that dedication has stretched well beyond the confines of a school classroom, as they have given countless hours to hunter education and shooting sports.

### Hunter Education ...

When Jan was teaching high school in the 1970s, some boys invited him to go dove hunting. "I realized how unsafe they were with their firearms and decided to do something about it," he said. So, he became an instructor with the NRA in 1971, and later with MDC's hunter education program in the 1980s. Once Gwen retired, she

found she could continue teaching as a hunter education instructor while coaching shotgun sports.

### ... and Beyond

Their next opportunity came at Jay Henges Shooting Range and Outdoor Education Center, where they started Team Henges, a nationally successful youth trap team that is still competing today. Jan co-founded the Missouri Youth Sport Shooting Alliance (MYSSA) and served as volunteer executive director. Gwen served as secretary/treasurer.

### In Their Own Words

"Whether air rifle, shotgun, or shooting sports organizations, hunter education and introducing young people to lifelong shooting sports has been a perfect combination for us."

by Cliff White

What's **your** conservation superpower?

## WHAT IS IT?

### GEM-STUDD PUFFBALL

These pear-shaped, golf-ball-sized mushrooms are adorned with spines that eventually turn brown and fall away, leaving behind pock-mark scars. Appearing in late summer to early fall, puffballs grow singly or in clusters in lawns, open woods, pastures, or on decaying wood. Though edible, it is best to consume them young, when the flesh is still white. The puffball should be cut in half and the color of the flesh examined before consuming.



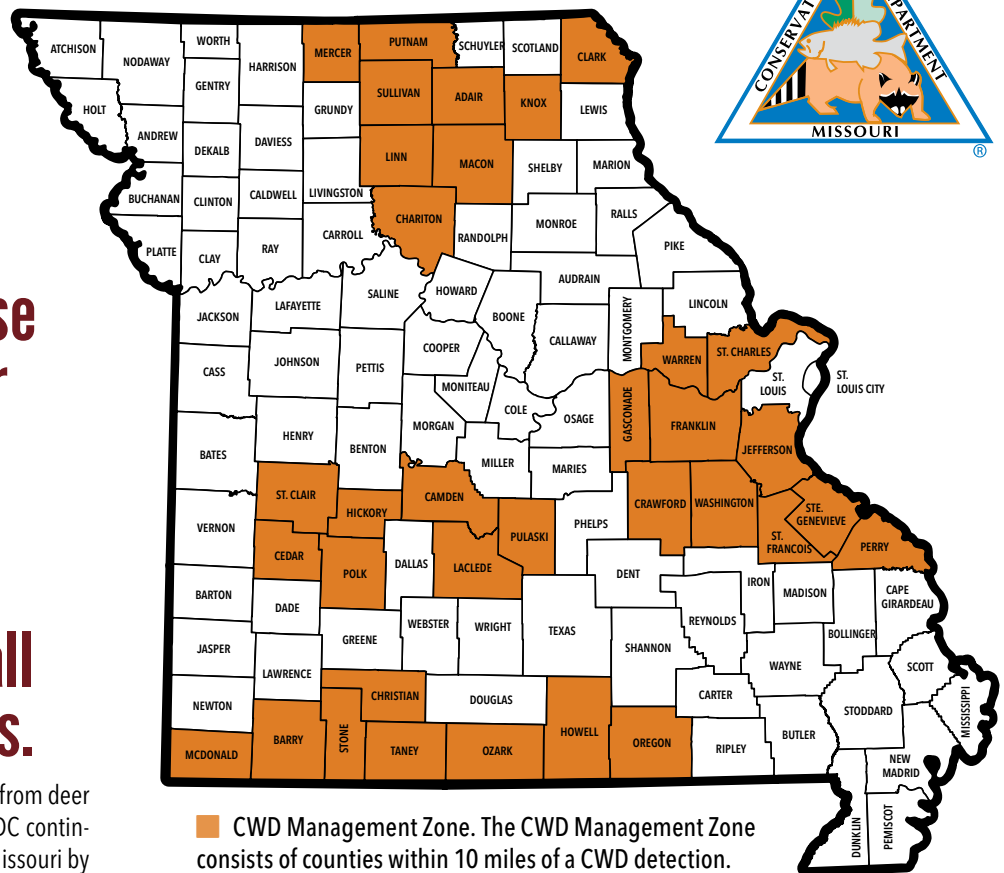
PUFFBALL MUSHROOMS: NOPPADOL PAOTHONG

# CWD

## Info to Know for the 2021–2022 Deer Season



**Chronic wasting disease (CWD) is a deadly, infectious disease in deer and other members of the deer family (cervids) that eventually kills all animals it infects.**



■ **CWD Management Zone.** The CWD Management Zone consists of counties within 10 miles of a CWD detection.

There is no vaccine or cure. CWD is spread from deer to deer and through the environment. MDC continues efforts to limit the spread of CWD in Missouri by finding new cases as early as possible and slowing the spread to more deer in more areas. Learn more at [mdc.mo.gov/cwd](https://mdc.mo.gov/cwd).

### CWD Management Zone

Four counties are new to the CWD Management Zone this year: Camden, Laclede, McDonald, and Pulaski. Grain, salt products, minerals, and other consumable products used to attract deer are prohibited year-round within the CWD Management Zone. For exceptions, see the *2021 Fall Deer & Turkey Hunting Regulations and Information* booklet at [short.mdc.mo.gov/ZXv](https://short.mdc.mo.gov/ZXv).

### Mandatory CWD Sampling Nov. 13 and 14

Hunters who harvest deer in any counties in the CWD Management Zone during opening weekend of the November portion of firearms deer season (Nov. 13

and 14) are required to take their harvested deer or the head on the day of harvest to one of MDC's numerous CWD mandatory sampling stations located throughout the zone. Hunters must follow carcass movement restrictions (see *Carcass Movement Restrictions*). Sampling and test results are free. Hunters who harvest deer in counties outside of the zone are not required to participate in sampling. Find sampling locations online at [mdc.mo.gov/cwd](https://mdc.mo.gov/cwd) or from MDC's *2021 Fall Deer & Turkey Hunting Regulations and Information* booklet.

### Before Arriving at a Mandatory Sampling Station:

- Field dress and Telecheck deer.
- Bring the carcass or just the head.
- Capes may be removed in preparation for taxidermy.
- Position deer in vehicles with head and neck easily accessible.
- Be sure the person who harvested the deer is present.
- Have the hunter's conservation number, and be prepared to find the location of harvest on a map.
- If using a paper permit, have it detached from the deer for easy access.
- If using the MO Hunting app, have permit and Telecheck information available.

## Voluntary CWD Sampling All Season Statewide

MDC will again offer statewide voluntary CWD sampling and testing of harvested deer during the entire deer season at select locations throughout the state. Find locations and more information online at [mdc.mo.gov/cwd](http://mdc.mo.gov/cwd) or by contacting an MDC regional office.

## CWD Test Results

Get test results for CWD-sampled deer online at [mdc.mo.gov/CWDTestResults](http://mdc.mo.gov/CWDTestResults). Results are free and will be available within weeks after the sampling date.

## Carcass Movement Restrictions

These regulations, included in the *Wildlife Code of Missouri*, are part of MDC's ongoing efforts to slow the spread of CWD.

### For hunters who harvest deer in Missouri from a CWD Management Zone county:

- Deer must be Telechecked before any parts of the carcass may be transported out of the county of harvest.
- Whole carcasses and heads may only be transported out of the county of harvest if delivered to a licensed meat processor, taxidermist, or to an approved CWD sampling station within 48 hours of exiting the county of harvest.

**Note:** Nov. 13–14, deer must be taken on the day of harvest to a CWD mandatory sampling station.

- The following carcass parts may be moved outside of the county of harvest without restriction:

- ▶ Meat that is cut and wrapped or that has been boned out
- ▶ Quarters or other portions of meat with no part of the spinal column or head attached
- ▶ Hides from which all excess tissue has been removed
- ▶ Antlers or antlers attached to skull plates or skulls cleaned of all muscle and brain tissue
- ▶ Finished taxidermy products

### For hunters bringing deer and other cervids into Missouri from another state:

- Hunters may no longer transport whole cervid carcasses into the state.
- Heads from cervids with the cape attached and no more than 6 inches of neck attached may be brought into Missouri only if they are delivered to a licensed taxidermist within 48 hours of entering Missouri.
- There is no longer a requirement that cervid carcass parts coming into the state be reported to the MDC carcass transport hotline.
- The following cervid parts can be transported into Missouri without restriction:
  - ▶ Meat that is cut and wrapped or that has been boned out
  - ▶ Quarters or other portions of meat with no part of the spinal column or head attached
  - ▶ Hides from which all excess tissue has been removed
  - ▶ Antlers or antlers attached to skull plates or skulls cleaned of all muscle and brain tissue
  - ▶ Upper canine teeth
  - ▶ Finished taxidermy products

### For taxidermists and meat processors:

- Taxidermists and meat processors throughout the state are required to dispose of deer, elk, and other cervid parts not returned to customers in a sanitary landfill or transfer station.
- Proof of disposal must be retained for 12 months for meat processors and for three years for taxidermists.

## Share the Harvest

Missouri's Share the Harvest program helps deer hunters donate venison to those in need. To participate, take harvested deer to an approved meat processor and let the processor know how much venison is to be donated. Deer harvested within the CWD Management Zone may only be donated to approved processors in the Share the Harvest CWD Testing Program. Deer harvested outside of the CWD Management Zone may be donated to any Share the Harvest processor. Learn more online at [mdc.mo.gov/share](http://mdc.mo.gov/share) or from MDC's *2021 Fall Deer & Turkey Hunting Regulations and Information* booklet.

## More Information

Get more information on CWD regulations and other CWD information online at [mdc.mo.gov/cwd](http://mdc.mo.gov/cwd) or from MDC's *2021 Fall Deer & Turkey Hunting Regulations and Information* booklet, available where permits are sold and online at [short.mdc.mo.gov/ZXv](http://short.mdc.mo.gov/ZXv).





DAVID STONNER



NOPPADOL PAOTHONG

# Beyond Being There

THE CULMINATION OF A GOOD NATURE PHOTO TAKES PATIENCE,  
RESEARCH, AND GETTING A LITTLE DIRTY ALONG THE WAY

by Matt Seek | photographs by David Stonner and Noppadol Paothong

**A**ccording to lore, when asked how he captured consistently astounding images, photojournalist Arthur “Weegee” Fellig answered, “F/8 and be there.”

The first part of Weegee’s maxim refers to setting the camera at an aperture — f/8 — that yields sufficient depth of field and a reasonably fast shutter speed. The second part alludes to the idea that amazing events unfold constantly, but to capture them in a photo, you’ve got to ... well ... be there.

Nowadays, anyone can snap a photo. You simply pull out your cellphone and tap the screen. But to create consistently astounding images — especially when nature is your subject — requires a bit more craft.

Nature photographers must know something about their subject: its preferred habitat, biology, behavior. They must be intimately familiar with their cameras and lenses, so they can make split second adjustments to shutter speed, aperture, focus. And — perhaps most importantly — they must have a vision, so they can make the viewer care about a creature or a landscape enough to conserve it.

For nearly two decades, the award-winning photographs of Noppadol Paothong and David Stonner have mesmerized readers of the *Missouri Conservationist* and *Xplor*. Recently, we sat down with Nop and Dave and asked them to tell us what went into making some of their favorite images.



## Black Bear with Cubs

Noppadol Paothong

I went along with a bear biologist one winter day to survey bear dens. While she checked on the health of the bears, I shot photos.

For this shot, I used a wide-angle lens and laid on my stomach right in front of the den. The best zoom lens is your own two legs!

It's important to pay attention to an animal's facial expressions. They communicate a lot. Here, mom is still groggy and sleepy, but her cubs are awake and active. You can tell by their expressions that they're relaxed and not too worried about me or the biologist.

**11-24mm lens • f/8 • 1/160 sec**



## Bald Eagle at Sunrise

Noppadol Paothong

This photo was shot on the coldest day in Missouri in nearly two decades. I left home at 2 a.m. The radio station said the wind chill felt like negative 35.

The colder it gets, the better it is to photograph eagles. The Mississippi River freezes upstream from Clarksville, which pushes eagles down to us. Cold keeps the eagles active, looking for fish.

Extreme weather also offers unique opportunities. Even though it was super cold, there was no wind. So, fog built up above the river. When the sun came up, I framed it shining through the fog and waited for an eagle to fly into the shot.

I like how the eagle leads the eye right into the sun. Everything worked out the way I planned. It doesn't always happen that way.

**300–800mm lens • f/25 • 1/8000 sec**

## Northern Harrier vs. Prairie-Chicken

Noppadol Paothong

This photo took me seven years to get.

I'd been photographing prairie-chickens for many years, and I'd seen harriers swoop down on them many times. But I was never able to get photos of it happening.

I saw this harrier gliding over the prairie, and all the other chickens flew away – except for one dominant male. The harrier dive-bombed him several times. Looking through my long lens was like looking at the sky through a drinking straw. Just finding the harrier in the frame was a challenge!

I held down the shutter button for one of the swoops. Back then, my camera could only shoot three frames per second. I caught four frames, and just one of them was sharp. See how the grass fades in and out of focus? The depth of field was really shallow. Luckily, both the hawk and chicken were in it. If either had been a few inches up or back, they would have been blurry.

Right after I snapped this photo, the harrier flushed the chicken, flew after it, and pinned it to the ground. But the chicken eventually got away.

**500mm lens • f/4 • 1/4000 sec**





## Frozen Missouri River

Noppadol Paothong

This past January, I went for a weekend hike with my family at Rocheport. It was a very cold morning, and we'd had temperatures below zero for several days in a row. I've often seen pancakes of ice flow down the Missouri River, but I've never seen it frozen completely solid.

I took several landscape shots, and they were fine, but they didn't really capture what I wanted. So, I thought, "What if I get closer?"

I put on a macro wide angle and laid down on the ice to focus on the lacy frost. The frost was very delicate. If I bumped it, it would break. If I got too close, it melted from my body heat. From a distance, I picked the best formation I could see and crawled out to it. I managed to get several shots. This one is my favorite. I think it shows the story of a frozen river the best.

**15mm lens • f/22 • 1/320 sec**

## Fox Kit Trio

Noppadol Paothong

Someone called the office and asked if I wanted to come see the foxes on their property. When you get these calls, you never know if they'll pan out. But the landowner showed me this den dug into the side of a ravine, and it looked active. I set up my blind about 100 feet away and waited.

At first, mom was very wary. Foxes can see, hear, and *smell* you. So, it doesn't matter what kind of blind you use or how well hidden you are. They know you're there.

I came back to the blind for five days in a row before mom's behavior returned to normal. She still knew I was there, but she'd decided I wasn't a threat to her kits. And eventually, out popped the kits — one, two, three — and I snapped this shot.

They could hear my camera click. That's what caused them to pause and look.

**600mm lens with 2X teleconverter • f/10 • 1/100 sec**



## Monarch Caterpillar Hatchling

Noppadol Paothong

I saw a monarch lay an egg on a milkweed leaf. I monitored the egg for three or four days, waiting for it to hatch. When the tip of the egg turned black, I knew the caterpillar would come out soon. Still, it took several hours for the little guy to emerge.

I used a macro lens that can shoot five times life size. The depth of field on a lens like this is tiny. A slight movement of just a couple millimeters — like if the wind blows the leaf — will throw the image out of focus. Luckily, I was able to get a sharp photo just after the caterpillar chewed its way out of the egg.

I like this shot because of all the details that most people don't get to see: the caterpillar, the chewed-up egg, and even an aphid on top of the egg, all in one shot.

**65mm, 5X macro lens • f/8 • 1/250 sec**





## Curious River Otter

David Stonner

A farmer called the office about a river otter in his pond. Over the next two weeks, I went to his farm before sunrise and hid in a goat hut about 50 yards from the pond. The musk from the goats was overwhelming, and I had to wear rubber boots because of all the manure.

I could set my watch by that otter! At 6:30, she'd pop over the pond bank, work her way around the pond — always counterclockwise — haul herself up on the same log to eat or shake off, and then disappear by 7:30.

Most animals are creatures of habit, including people. You get up at a certain hour, pour a cup of coffee, read a newspaper, check your phone. Animals have their own routines. This otter taught me that, and it's been a revelation that's served me well as a wildlife photographer.

I think the photo captures the playfulness of these funny, curious creatures. Shortly after I snapped this shot, the otter batted the turtle off the log. I don't know why. Just to be ornery, probably.

**500mm lens • f/5.6 • 1/400 sec**

## Swooping Peregrine Falcon

David Stonner

There's a pair of peregrines that nest every year at the Portage des Sioux power plant near St. Charles. A biologist was doing nest checks, and I got to tag along.

As we climbed up the side of a cooling tower, the female became quite irritated with us. We had to wear hard hats because she kept swooping down on our heads. Needless to say, it's quite thrilling to be dangling on a catwalk 200 feet above the Mississippi River and have nature's fastest creature dive-bombing you.

Because of her speed, getting her in the frame — and in focus — was a challenge. I used a 100–400mm zoom. This made it a bit easier to zoom in quickly as she dove. 500mm would have been too bulky and unwieldy.

At one point she took a break from whacking the biologist on the head. She perched on the railing of the catwalk to squawk and give us a piece of her mind. She'd been hunting recently, probably for food for her chicks. You could see bits of meat and feathers on her beak.

Just being able to be that close was amazing.

**100–400mm lens • f/5.6 • 1/4000 sec**





## Frosty Sunrise at Spring Creek Gap

David Stonner

I was driving down Highway 63 on my way to a photo shoot and noticed this beautiful frost coating everything in the valley. Back then, there was a fire tower at Spring Creek Gap, so I drove there as quick as I could.

As I was running up the steps of the tower, the sun was starting to hit the tips of the pine trees. I had to work quickly because the sunlight was burning the hoarfrost off everything it touched.

People often ask me, "How can I get better landscape photos?" I tell them, "Use a telephoto lens." A wide-angle isn't always best for landscapes. A telephoto allows you to extract snippets of the scene and compress perspective to stack up the foreground, middle ground, and background.

To me, this photo encapsulates the marriage of late winter and early spring. It shows lots of transitions: winter fading into spring; the interplay of warm sunlight against a cool, frosty valley; green conifers and gray hardwoods. A few minutes after I took this shot, the frost was gone.

**120–300mm lens • f/4 • 1/80 sec**

## Mina Sauk Falls

David Stonner

Mina Sauk is just a lovely place. It's the state's highest waterfall from top to bottom. There are others that have a longer single drop. This one has a lot of stair-steps that are really interesting. Sometimes it's dry, but it flows well after a nice rain. Missouri is not abundant with waterfalls, so this is a draw.

If I'm rained out when I'm shooting elsewhere in the Ozarks, I know at least I can pivot and get pics of Mina Sauk.

Sometimes I park at Taum Sauk State Park and take the short walk in. But if I have time — half a day or so — I'll park at Ketcherside Mountain Conservation Area. It's a longer, more rugged hike, but there are lots of glades and vistas to shoot along the way.

I used a long shutter speed to get the smooth, flowing effect of the water.

**24–70mm lens • f/11 • 2 sec**





## Bell Mountain Sunrise

David Stonner

I made this photo while I was working on a story about the Ozark Trail (OT) for the *Conservationist*. There's a spur off the OT that follows a ridgeline and leads to this spectacular vista. I hiked in the night before and set up camp. This series of photos was literally shot out of the front door of my tent the next morning at sunrise.

I had the camera on a tripod and snapped a photo, panned a little to the side, made sure the next view slightly overlapped the previous one, snapped another frame, and continued this way until I had about six images I could stitch together to create this panorama.

I like this photo because it's a wonderful reminder of an awesome weekend spent discovering a new — at least to me — corner of the Ozarks. It's almost a vacation photo that I took for work. It makes me want to go back.

**24–70mm lens • f/16 • 1/2 sec**

## Sunset at Bushwhacker Prairie

David Stonner

To be honest, I'd almost given up on this shot. There was cloud cover from horizon to horizon. And the light was just gray and flat and overcast and boring.

So, I was picking ticks off my legs and getting ready to pack up. Then a gap in the clouds opened, and sunshine broke through and backlit the wildflowers.

That's what I like best about this photo: the luminous quality of the light coming through — rather than on — the petals, which gives them a warm glow.

I only had a few minutes. Snap, snap, snap — just a handful of photos. And then the sun dropped behind another cloud bank, and the light was gone. It's a little moment I caught because I stuck it out.


So, here's a pro tip: Don't leave too early. You might miss the perfect moment.

**16–35mm lens • f/11 • 1/30 sec**

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*Matt Seek is the editor of Xplor, MDC's magazine for kids. When he isn't pushing words around a computer screen, he enjoys exploring wild places with his family.*





Moles may surface to navigate around buried stones or during drought, when underground prey is scarce.

# Moles and Shrews

FEROCIOUS, FASCINATING, AND SOMETIMES INFURIATING,  
THESE LITTLE CRITTERS PLAY KEY ROLES IN NATURE

by Bonnie Chasteen

If you've ever tried to mow over a molehill, you probably have strong feelings about moles. You may even blame them for chewing up your vegetable garden.

But Missouri's only mole — the eastern mole — is mainly a meat eater. Yes, it will eat the seeds of oats, wheat, corn, and grass, but it mostly seeks and destroys earthworms, grubs, ants, centipedes, sowbugs, and other invertebrates. If you hate Japanese beetles, you might find a little room in your heart for the eastern mole, which eats their grubs.

The eastern mole's taste for invertebrates is part of what makes it kin to Missouri's six kinds of shrews. Moles and shrews may look like rodents, but they're not. They belong to the order Eulipotyphla (*yoo-luh-PAH-tif-luh*), which means "truly fat and blind."

### Chunky, Near-Sighted, and Super-Amped

It's true — moles and shrews are on the chunky side. They need to eat a lot to fuel their super-amped metabolisms, but they're not blind. They have eyes, but they don't see well. Instead, moles and shrews rely on their keen senses of hearing, smell, and touch to find prey and mates in their tunnels.

For both moles and shrews, prey is largely insects and other invertebrates. Neither moles nor shrews sleep much. Shrews, in particular, must hunt almost constantly or starve. Some species are even known to take the occasional mouse or gartersnake.

Moles and shrews are also famously stinky. Biologists speculate that their scent glands help them mark territory, communicate with potential mates during breeding season, and ward off would-be predators.

Together, moles and shrews make up the underground branch of nature's pest-control force.

### The Eastern Mole

This chipmunk-sized critter has palmlike front feet that it holds in front of its head, palms facing outward. The mole uses its large front feet to move through the soil in about the same way a person swims underwater. The head looks nearly featureless except for the flexible, piglike snout. Although the mole's eyes are only good for telling light from dark, its senses of hearing, touch, and smell are acute. The velvety fur is slate gray but often appears silvery or sooty black on juveniles. Its plushlike quality enables the mole to slip easily through the soil, either forward or backward, without getting bits of dirt stuck to the fur. A cinnamon-brown staining on the chin and along the middle of the belly is common on adults. The tail is nearly naked and is highly sensitive to touch.

### Habitat and Foods

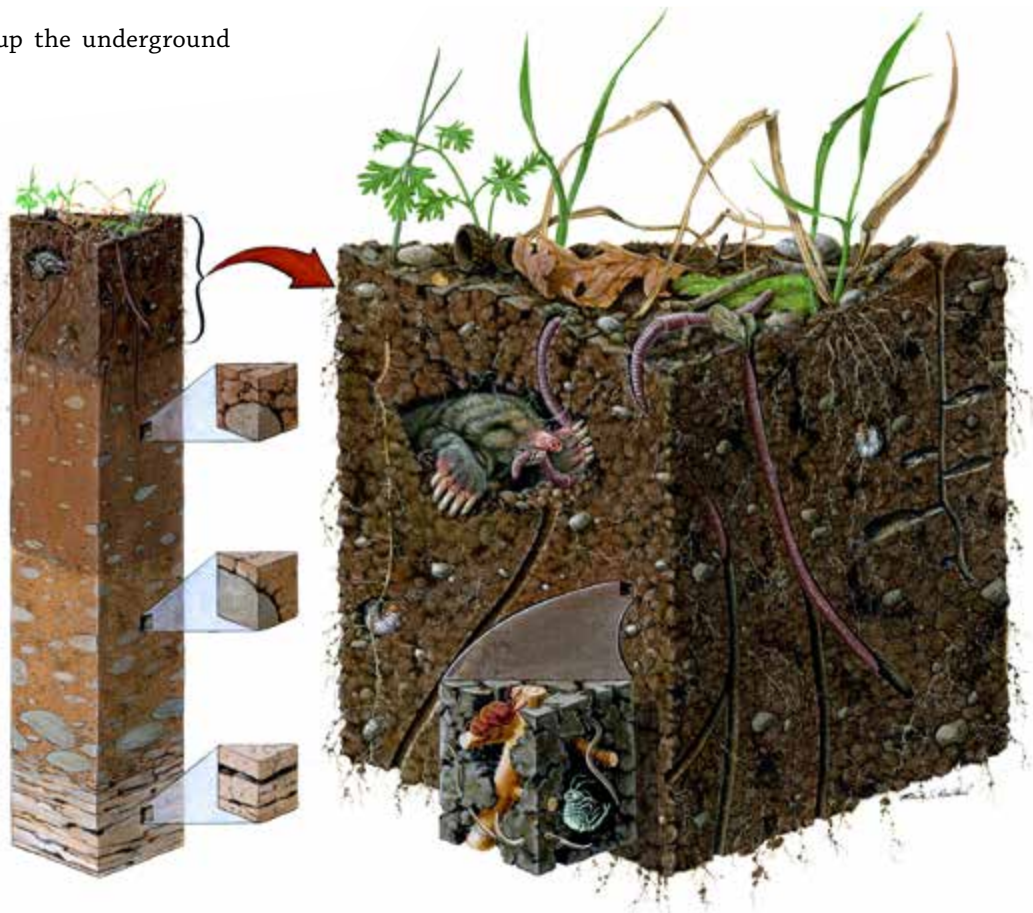
Moles live in a series of tunnels underground and occur wherever the soil is thick, loose, and cohesive enough to support a tunnel system — and plenty of prey items.

Moles go for grubs and earthworms. They also prey on other soil-dwelling creatures such as beetles, spiders, centipedes, ant pupae, and cutworms. In fact, a mole can gobble up more than 140 grubs and cutworms daily (many of which are destructive to your farm, garden, and landscaping plants). Almost always on the hunt, moles can eat half their body weight a day.

### Life Cycle

Each mole has its own system of tunnels and lives a solitary life. Moles are active day and night, resting for about three hours, then becoming active again for around five hours. Moles breed in late winter or spring and have a gestation period of about four to six weeks. Single annual litters of two to five young are born in March, April, or May. Young moles are born naked and helpless, but they grow and develop rapidly. About four weeks after birth, they leave the nest and fend for themselves.

**Moles and most other underground life forms live in the top layer of soil, which is more organic, moist, and loose than the rocky, dry, and dense lower layers.**



## Missouri's Many Shrews

Shrews are mouselike animals, but they are not mice, and they don't have the chisel-like front teeth that characterize plant-eating beaver and other rodents. Instead, they have sharp, spiky teeth, which are used for hunting prey. Shrews are more closely related to moles than to any other Missouri mammals. Six species of shrews occur in Missouri, but they share common traits and habits.

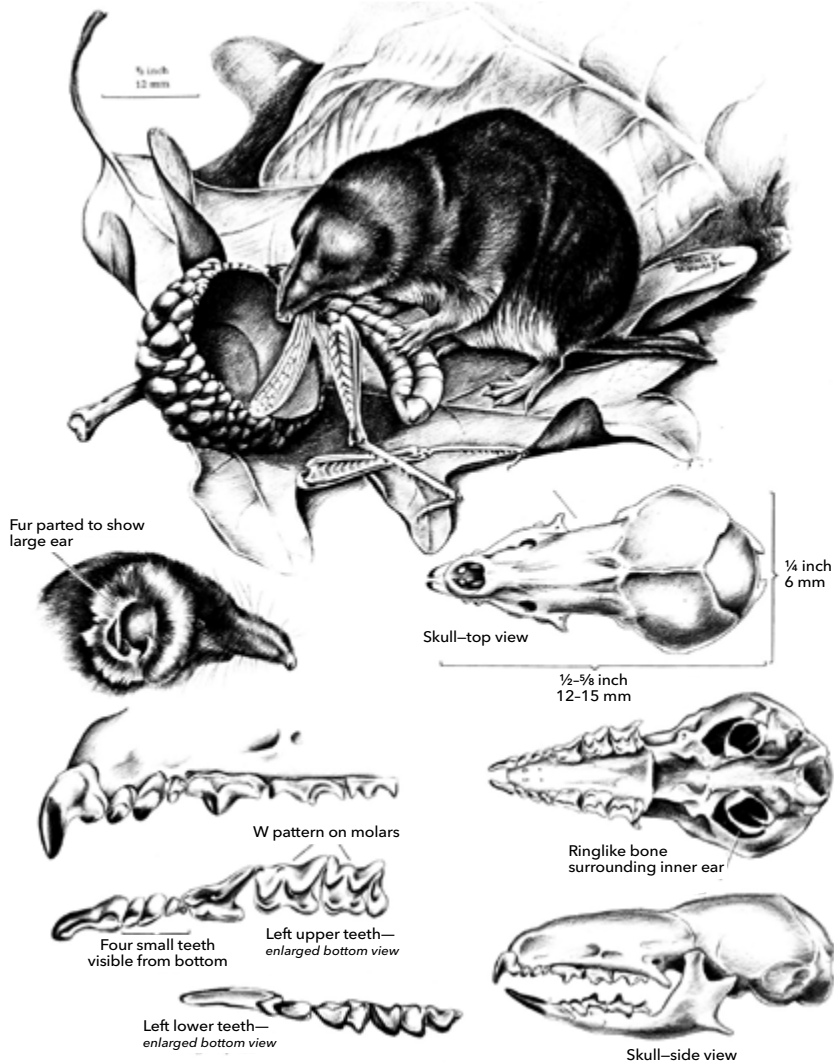
## Habitat

In general, Missouri shrews run on the ground surface, amid leaf litter, and just under the ground.

Most of our species frequently use runways and tunnels originally built by moles and mice, as well as building their own tunnel systems. Short-tailed shrews may build tunnels extending to nearly 2 feet below the surface, but our other species' burrows are shallower.

Many shrews live under or deep within decaying logs or stumps, or under rocks. Their nests — where they raise their young, or where they overwinter — are often in chambers of their tunnel systems lined with grass and leaves. The cinereus shrew has specialized chambers for food storage, resting, and raising young.

Shrews are notoriously belligerent to each other. In fact, researchers report that if young shrews follow each other into a trap, one will usually overpower the others and eat them overnight. Therefore, shrews usually live solitarily. However, the least shrew sometimes digs tunnels cooperatively, with more than one individual working on the project. During winter, up to 31 least shrews have been recorded together in one nest, apparently sharing body heat.



The skulls of some Missouri's shrews are so similar, they can best be identified by comparing cranial measurements and number and shape of their teeth.

Short-tailed shrews are often found under old logs, in mossy banks, and in leafy cover on the forest floor.



## Relatives Worldwide

**Hedgehog and Gymnure:** Europe, Asia, and Africa

**Solenodon:** Cuba and Hispaniola

**Desman:** Southwest Russia and Pyrenees



Hedgehog



Gymnure



Solenodon



Desman



The northern short-tailed shrew eats mainly animal foods, with invertebrates being the primary component. They will cache their food within their tunnels to eat later, if it doesn't spoil.

## Foods

Shrews, like moles, focus on insects and other invertebrates. The short-tailed shrews, being slightly larger, may also eat larger prey, including salamanders, small snakes, birds and their eggs, mice, and other shrews.

Our three species of short-tailed shrews have a powerful venom in their saliva that immobilizes prey and extends the time fresh food is available, so it facilitates food hoarding. Also, it slows the heart and breathing and may break down the muscle tissue of larger victims.

Least shrews typically attack the joints of the jumping legs of crickets and grasshoppers, which helps subdue these insects.

Shrews don't eat much plant material. Short-tailed shrews, however, are more likely to do so than the other species, especially in winter, when they eat roots, nuts, fruits, berries, and fungi.

Because shrews don't hibernate, they must continue to eat during the winter. During this time, they seek out dormant insects such as overwintering larvae and pupae in the soil and in rotting logs.

With their high metabolisms and active lives, shrews must eat a tremendous amount of food, relative to their size. The cinereus shrew may eat three times its own body weight every 24 hours. The least shrew can eat 75–100 percent of its own body weight a day,

and the short-tailed shrews can eat 50 percent of their weight each day.

Because they feed principally on hard-bodied insects and other small invertebrates, shrews (like bats) have sharp-cusped molar teeth that cut up the hard parts of their prey. The incisors of shrews are modified into grasping pincers that are well suited for holding the hard bodies of the large, struggling insects the tiny shrew feeds upon.

## Life Cycle

Most of Missouri's shrews generally breed from spring through fall, having several litters each year. Short-tailed shrews typically have only one to three litters a year and occasionally breed during winter, too. Shrews usually breed during their first year of life, often by the fall of their first year. Gestation varies by species, but it is generally about 22 days.

Young, about the size of honeybees at birth, develop rapidly and are weaned in about a month. Cinereus shrews are weaned after just 20 days. Least shrews are weaned in three weeks and look fully grown within a month. Southeastern shrews stay in the nest for three to four weeks until fully grown. In most species, the mothers provide all the parental care, but in least shrews, apparently both parents care for the young.

Shrews, especially when young, have a high mortality. They may die of shock, from accidents, and from cold. Short-tailed shrews usually live for only a year or 18 months, with most surviving for no more than one winter, but some may potentially live for three years.

Shrews, like many other mammals, produce odors from glands that signal to others of their species their sex and receptivity for breeding. Their musky odors, rubbed in a tunnel, also signify ownership and help individuals establish their territory.



## Accommodate or Control?

Because they help keep yard, garden, and farm pests in check, consider tolerating moles and shrews in back lots and borders. Poisoning moles and shrews is not recommended — introducing poison to control one kind of animal inevitably affects the local ecosystem. If they become problems, moles and shrews can sometimes be controlled with traps.

## Check Out Missouri's Online Field Guide

Most of the information for this feature came from Missouri's online *Field Guide*, which features more than 1,500 entries with tips on what to look for each season. Head to [mdc.mo.gov/field-guide](https://mdc.mo.gov/field-guide).

## North American Least Shrew

*Cryptotis parva*

Sometimes called simply the “least shrew” or the “bee shrew,” this is one of the smallest mammals in Missouri, measuring only about 3 inches from the tip of the nose to the tip of the tail and weighing 1/16 ounce.

The least shrew is generally abundant and probably occurs statewide. Preferred habitats include open grass, brush, and dry, fallow fields, with marshy or timbered areas to a lesser extent.

## Three Short-Tailed Shrews

Short-tailed shrews (genus *Blarina*) have an exceedingly pugnacious and energetic nature. For a long time, they were considered a single, widespread species. Now, four species are recognized, with three occurring in Missouri. Specialists use cranial measurements and DNA sequencing to identify the different species.

Short-tailed shrews occur statewide, but each species’ range is imperfectly known. Their populations can fluctuate wildly from year to year. They live in dark, damp, or wet localities in flooded areas or fields covered with heavy, weedy growth. They occur less often in grassy cover.

## Cinereus Shrew

*Sorex cinereus*

Also known as the masked shrew, the cinereus is distinguished from short-tailed and least shrews by a longer tail, which is more than one-half the length of the head and body, and from the southeastern shrew by a slightly longer tail with an obvious constriction at the base.

In Missouri, it occurs in low, damp areas along streams and in floodplains — although usually not in grasslands — in the northern half of the state.

## Southeastern Shrew

*Sorex longirostris*

Uncommon across Missouri, the southeastern shrew probably occurs in all but the northwest corner of the state. In most of its North American range, it is associated with marshy or swampy areas, or wooded places with dense ground cover. In Missouri, it is known mostly from dry upland sites with some woods.



*Cryptotis parva*

One of Missouri’s smallest mammals



*Blarina brevicauda*

Shorter, heavier snout than other Missouri shrews



*Blarina carolinensis*

The smallest of Missouri’s short-tailed shrews



*Blarina hylophaga*

Similar to *carolinensis* but more gray than brown



*Sorex cinereus*

Has the longest tail of Missouri’s six shrews



*Sorex longirostris*

Uncommon in Missouri but has been found in dry upland woods

## Mission Critical

Even though they’re subterranean predators, moles and shrews still become prey to hawks, owls, coyotes, weasels, badgers, foxes, cats, dogs, and snakes. Whether predator or prey, moles and shrews play key roles in food webs throughout Missouri. Without them, farmers would have a harder time controlling invertebrate pests, and the populations of top predators would possibly decline.

Moles and shrews, like the proverbial canary in the coalmine, can also indicate local environmental quality. If pesticides kill off their main prey — they will soon disappear, too.

In addition to serving as both predator and prey in local food webs, moles and shrews improve the quality of local soils. ▲

Bonnie Chasteen recently retired from MDC. She is the former associate editor of *Xplor* and contributor to *Missouri Conservationist*.



# Quality Hunts

## for Bobwhite Quail

GOOD HABITAT HOLDS HOPE FOR  
MISSOURI'S BOBWHITE HUNTING TRADITION

by Bill Graham

**G**iven a secure place to hatch eggs, lead chicks to food, and find shelter from predators and winter winds, bobwhite quail will survive and even thrive. That's good news for a new wave of quail and pheasant hunters. But to find those game birds, they must be willing to make long walks, cross a fence or two, and then walk some more in places with good grassland bird habitat. That means wading at times through brush, briars, and assorted waist-high wildflowers or grasses.

Like all hunting and fishing, there's no guarantee you'll find quail or shoulder your gun fast enough for an accurate shot. Quail flush with a startling burst of speed and loud wing flutter. Once up, they fly fast. Challenging wingshooting along with nature's all-weather outdoor variables makes hunting quail an adventure.

Eating fried quail and a side of white gravy made from skillet drippings is also, like quail hunting, a longtime beloved Missouri tradition. One that continues despite recent downturns in bobwhite covey numbers due to habitat loss and environmental factors. But hunters and bird dogs willing to amble in good quail cover that's near the ground-feeding bird's food sources can find coveys.

"If you walk the appropriate habitat, a mix of native grasses and forbs, with some woody escape cover, you're likely going to find the birds," said Andrew White of Chillicothe, ardent quail hunter and a farm bill wildlife biologist for Quail Forever and Pheasants Forever in Missouri. "It might take you longer than years past to find them in that habitat, but it's not impossible to find them."

Places to hunt upland game birds are there for those willing to explore, and new hunters are finding opportunities to learn the skills and go afield. Sharenda Birts of Kansas City took some MDC classes for firearms safety and shooting skills. Then she went on a guided hunt for women. Now she's enjoying hunting and mentoring youth and women who are interested in the sport.

"I like to walk the fields," Birts said. "Even if I don't harvest a bird, I feel like I've learned a little bit more about nature."

## Getting Started

Birts did not grow up in a family with a hunting and fishing background. But doctor's orders for recovery from a bout with thyroid cancer prompted her to become more active outdoors. "The more I got outside, the more I enjoyed it." Then she began to wonder, "how hard is it to get into hunting."

Birts took some classes, including getting her certification through MDC's hunter education program. Besides firearm safety, that course covers the basics of hunting. Her first success was harvesting a doe during a mentored deer hunt. She also connected with other women hunters through a group called WildHerness. A mentored hunt for pheasants started her love for upland bird hunting.

"I think one of my first loves of hunting is wingshooting, especially for pheasants," Birts said.

Last November, she went on a quail hunting trip in northwest



Missouri with White and other hunters, plus their trained bird dogs. Hunting dogs with their scenting ability freeze rigidly "on point" when they smell upland game birds, such as quail. When the quail flush, hunters shoot, and the dogs help find the downed birds and often retrieve them.

"I enjoy watching the dogs in action," she said. "It's amazing to see how they cooperate with their owners."

Justin Skipper of Chillicothe had hunted small game, such as rabbits and doves. But with White's help, he's also added quail hunting to his autumns.

"I'm trying to venture out and do things I haven't done in a long time," Skipper said, as he watched bird dogs roving a field and scenting for quail.

The quail were not located during this hunt, but nighttime covey roosts were found with quail droppings in grass matted down in a circle. Large areas with varied native vegetation are good for quail but challenging for quail hunters. Yet to have quail, you need habitat. Walking in it is part of the fun.

"I enjoy being outside in nature," Skipper said. "With the leaves off, you can see a lot more of the scenery and topography, plus hunting gets you out here moving."



## Where to Go

Habitat is key for quail hunting. Experienced quail hunters seek out good grassland bird habitat first, then they go hunting. Sometimes it's in weedy patches next to crop fields, or it may be a large fallow field or one with restored native grasses, such as those in the Conservation Reserve Program (CRP).

Missourians in the decades after World War II enjoyed some golden years quail hunting because nurturing habitat was plentiful. Grassy fence lines, hedge rows with weed and shrub growth, weedy field corners and creek beds, lingering native grass patches, and crop fields provided what quail needed to thrive. Missouri farms had a lot of crop and ground cover diversity, and that helped quail.

Today, agriculture is more intensive and usable habitats for ground-dwelling grassland birds are drastically reduced and fragmented in some areas. That's led to a statewide decline in quail and quail hunters. Rainy and cold weather patterns during nesting seasons have also depressed quail numbers. The 2020–2021 winter was harsh throughout the state and took a toll on quail. An annual roadside count of quail this summer by conservation agents found a dip in quail numbers throughout most of the state, said Beth Emmerich, MDC scientist and quail biologist.

However, MDC studies have proven that habitat management practices to benefit bobwhites in conjunction with agriculture can significantly boost quail covey counts. Some counts have found 10 times more quail on land managed to boost quail versus land with no practices such as cover strips, edge feathering, grazing, or prescribed burns. Not only are covey counts far higher in areas with good habitat management, Emmerich said, but quail populations bounce back far quicker from events such as harsh winters.

"I think the biggest habitat loss in Missouri is good brood rearing habitat," Emmerich said. "They need more openings they can lead the young through, more open weedy cover, and a lot of bare ground."

Sharenda Birts of Kansas City learned how to hunt quail and pheasants from MDC classes and a Pheasants Forever mentored hunt. Now, she's mentoring other women and new hunters interested in upland game bird hunting. She is hunting with Andrew White and Justin Skipper of Chillicothe.

Chief, Andrew White's German wirehaired pointer, is one of the pointing dogs that freeze on point when they smell game birds. They also retrieve downed birds shot by hunters. Upland bird dogs are a big factor in hunter success. In the off season, they're companions and family pets.



## Places With Habitat

Successful hunters look for areas with the variety of vegetative cover and food that quail need. Many MDC conservation areas have tracts managed to support bobwhite quail. The habitat that White, Birts, and other hunters found last fall at the Bunch Hollow Conservation Area varied with old fields converted to native prairie grasses, shrubby draws, weedy gullies, and a hedge tree row bordering a crop field. They started the hunt by fanning out to walk a field with frost-killed wildflowers and grasses with mature seed heads. White watched his German wirehaired pointer, Chief, pushing through the grass, nose to ground.

"The quail may be out here feeding," he said. "There's lots of seed for them to eat. We found a few coveys in this spot last year."

No coveys were found on this hunt, but that's the challenge of quail hunting, especially now. In an era when quail are persisting best on land with large areas of favorable habitat for grassland birds, those large areas can be more challenging to hunt. Bobwhites are excellent runners as well as being fast flyers for short distances. Coveys in good habitat have more escape routes and places to hide. Hunters and dogs may need to crisscross fields and recheck key places to find them.

Another option is MDC's Missouri Outdoor Recreational Access Program (MRAP), a partnership with private landowners. With help from federal funding, landowners receive payments in exchange for allowing the public access for outdoor activities. Quail hunters should check carefully for the allowed activities on a specific property to see if quail hunting is permitted. If allowed, it is helpful to scout for good habitat ahead of a hunt. Although, some quail hunters simply like to explore new places.

Quail hunters who politely seek permission to hunt on private land not enrolled in any program might gain access. But hunting on private land always should be by permission only, never by trespassing, which is illegal. Farmers who share access are treasured by quail hunters, especially if good wildlife habitat is near the crops and pastures. Respect for people, fences, gates, and unharvested crops builds bridges. Providing the host with field-dressed birds for a quail dinner is appreciated.

## Tips for Quail Hunters

MDC gives added attention to habitat improvements for bobwhites in specific areas known as quail restoration landscapes. Habitat improvements occur on both public and private land within those multi-county landscapes.

For more information on quail restoration landscapes in Missouri, visit [short.mdc.mo.gov/Z5q](https://short.mdc.mo.gov/Z5q).

To learn more about bobwhite quail hunting in Missouri, visit [short.mdc.mo.gov/Zy8](https://short.mdc.mo.gov/Zy8).





From top left, clockwise:

David Wyatt of Grandview is a veteran upland bird hunter who enjoys sharing the hunt with his dog, Major.

Sharenda Birts learns to be ready for fast-flying quail, as Andrew White looks on.

Josh Carrithers (left) and Adam White, both of St. Joseph, are among the young hunters finding quail when they walk good habitat.

Bird dogs point quail in cover and they help hunters retrieve downed birds.

## The Good New Days

Richard Phillips has seen what good habitat can do for quail hunting. He lives in Blue Springs but shares a heritage family farm and two additional farm tracts in Carroll County with family and friends. In recent decades, they added plantings with quail-friendly shrubs, forbs, and grasses, as well as food plots. A 100-acre home place that once rarely had quail now has an abundance.

“We never had quail before, and now there’s eight coveys on that property,” Phillips said. He’s seen similar results on their other properties with habitat improvements. “There’s been a huge increase, it’s more than quadrupled the number of quail.”

Many farms in the Carroll and Caldwell county areas have been given a quail habitat assist by White, along with Lee Metcalf and Nate Mechlin, MDC private land specialists. It’s part of the statewide work by MDC staff to boost quail numbers. Metcalf has seen quail respond during two decades working with landowners and public and private conservation partners.

“It’s been 20 years, and the programs have gotten better and better at providing landowners cost sharing for quail habitat,” he said.

Hunters are responding in his community. Hunting dog crates are once again a common vehicle accessory during autumn. For quail hunters who haven’t walked the fields in a while, or newcomers wanting to join the ranks, the lesson is that quail can be found if enough good habitat is present, and if you are extra persistent in looking for them.

Birts is anxious to go on upland bird hunts she has planned this fall with friends, including women like her who are relative newcomers to the sport.

“My family enjoys seeing what I bring home because they’re involved in the cooking,” she said. “I harvest and clean, and they kind of took over cooking and preparing the wild game meals. I like being outdoors and they love being involved in a portion of my outdoor adventures.” ▲

*Bill Graham is the MDC media specialist for the Kansas City and Northwest regions. He’s a lifelong hunter, angler, and camper. He also enjoys hiking and photographing Missouri’s best wild places.*



DAVID WYATT, SHARENDA BIRTS AND ANDREW WHITE, NORRIS DOLPH, JOSH CARRITHERS, ADAM WHITE, GERMANY SHORTHAIR, KNEELING HUNTER WITH QUAIL - HUNTERS WALKING FIELD BILL GRAHAM

# Get Outside

in NOVEMBER



→ Ways to connect with nature



Northern cardinal

## Birders Beware

With cold weather setting in, birders beware — a flock of hungry birds will be descending upon your feeders. Are you ready? Among them will include the energetic and always popular black-capped and Carolina chickadees. In addition, you are sure to see northern cardinals, dark-eyed juncos, blue jays, and countless others amongst the feathered feeding frenzy. For tips on setting up your feeding stations this year, check out [short.mdc.mo.gov/ZCS](http://short.mdc.mo.gov/ZCS).



Blue jay

## A Tale of Two Autumns

Red autumn, with its brilliant reds and oranges, ends this month, giving way to gray autumn, dominated by rusts, tans, and grays. The dividing line between these two distinct autumns is usually the first hard freeze, often coupled with heavy rain or strong winds that knocks the leaves from the trees. Gray autumn is a good preview of winter.

VIRTUAL

## Native Plants

Thursday • Nov. 18 • 12-1 p.m.

Virtual event at Anita B. Gorman Conservation Discovery Center, 4750 Troost Ave., Kansas City, MO 64110

Registration required at the Deep Roots website at [deeproots.org/native-plants-at-noon](http://deeproots.org/native-plants-at-noon)

Virtually tour the native landscape at MDC's Anita B. Gorman Conservation Discovery Center. Guided by native landscape specialists Alix Daniel and Cydney Ross, this monthly series features a live look at native plants of interest throughout the year. This program is a partnership with Deep Roots.

### Natural Events to See This Month

Here's what's going on in the natural world.



Winter is a good time to look for bald eagles.



Voles and mice are active, creating tunnels under the snow.



Look for frost flowers during the first hard freeze.

## Give Your Rake a Break

Dreading the annual chore of raking leaves? Just don't do it! It's better for nature if you let the leaves lie. Allowing fallen leaves to remain on the ground is wildlife friendly. Fallen leaves provide much needed refuge and food for backyard wildlife, including insects, such as butterflies and other pollinators. The insects that overwinter in your leaf litter are essential food for nesting songbirds in spring. In addition, fallen leaves nourish the soil and create a nice mulch layer that helps rain and snow soak into the ground.



## Get that Green

After most of the fall color is gone, you may see some green remaining in the forest understory. It may be exotic invasive bush honeysuckles, as they remain green well into December. Bush honeysuckles stay green after most plants have gone dormant, and in spring green up before other species leaf out. Because of this and their aggressive growth, bush honeysuckles outcompete native wildflowers and other plants and prevent forest regeneration. If you encounter this problematic shrub, help to control it. For more information, visit [short.mdc.mo.gov/ZCi](https://short.mdc.mo.gov/ZCi).

Bush honeysuckle



# HUNTERS, HELP US!

## NOVEMBER 13-14

### MANDATORY CWD SAMPLING OF DEER OPENING FIREARMS WEEKEND for CWD Management Zone counties

Bring your deer  
to a sampling  
station near you.



Get information on chronic wasting  
disease and sampling locations at  
[MDC.MO.GOV/CWD](https://MDC.MO.GOV/CWD)

# Places to Go

ST. LOUIS REGION

## Rockwoods Reservation

Area offers visitors hiking, climbing options

by Larry Archer

✳ If you've been pacing the floor and climbing the walls indoors this fall, Rockwoods Reservation can provide a better outlet for your pacing and climbing urges.

Located on 1,880 acres in southwest St. Louis County, Rockwoods Reservation has six named trails totaling nearly 13 miles of mixed surface (asphalt, chat, and natural) routes that wind through the area's mostly wooded hills, making it a destination for St. Louis residents wanting to spend time outdoors, according to Gateway District Supervisor Raenhard Wesselschmidt, who oversees the area.

"It's a very popular hiking area all year long and has been ranked as having some of the top hiking trails in the St. Louis area," Raenhard said.

Two of the trails — Green Rock and Hamilton-Carr — connect to an additional 16 miles of trails beyond Rockwoods Reservation.

Rock climbers will find new opportunities at the recently opened climbing area that takes advantage of an abandoned quarry on the property, he said.

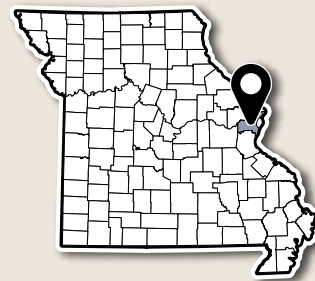
"It's geared more toward that intermediate-type climber," Raenhard said of the area, developed by MDC partner Beta Fund, an organization that supports rock climbing in the Midwest. "It's a great opportunity for people to get out and do some outdoor climbing close by in the St. Louis area."



NORRADOI PAOTHONG



The hilly and wooded landscape of Rockwoods Reservation in southwest St. Louis County makes its trail system a popular hiking destination.



## ROCKWOODS RESERVATION

consists of 1,880.8 acres in St. Louis County. In Wildwood from Highway 100, take Highway 109 south for 2 miles, then Woods Avenue west 50 yards, and Glencoe Road north to Rockwoods Reservation.

38.5563, -90.643

[short.mdc.mo.gov/ZZc](http://short.mdc.mo.gov/ZZc)

636-441-4554

## WHAT TO DO WHEN YOU VISIT



**Birdwatching** Included in the National Audubon Society's Lower Meramec Hills and Valleys Important Bird Area ([short.mdc.mo.gov/ZDm](http://short.mdc.mo.gov/ZDm)). Included in the Great Missouri Birding Trail ([short.mdc.mo.gov/ZDW](http://short.mdc.mo.gov/ZDW)). The eBird list of birds recorded at Rockwoods Reservation is available at [short.mdc.mo.gov/ZDP](http://short.mdc.mo.gov/ZDP).



**Camping** Designated youth camping sites. Special use permit required.



**Hiking** Six named trails totaling nearly 13 miles of mixed surface (asphalt, chat, and natural).

## DISCOVER MO OUTDOORS

Users can quickly and easily find outdoor activities close to home, work, or even while traveling with our free mobile app, MO Outdoors. Available in Android or iPhone platforms at [mdc.mo.gov/mooutdoors](http://mdc.mo.gov/mooutdoors).



## WHAT TO LOOK FOR WHEN YOU VISIT



Carolina chickadee



White-tailed deer



Coyote



Pileated woodpecker

# Wild Guide



## American Beaver

*Castor canadensis*

### Status

Common

### Size

Length: 34–54 inches;  
weight: 26–90 pounds

### Distribution

Statewide except  
Mississippi Lowlands



### Did You Know?

Beavers live in and along streams, rivers, marshes, and small lakes. Though they are famous for dam building, in Missouri they are less likely to construct dams than they are in regions farther west and north. Instead, in our fast and fluctuating streams, they usually excavate dens in a high bank.

The American beaver is a large rodent with webbed hind feet; a large, relatively hairless, horizontally flattened tail; a blunt head with small eyes and ears; a short neck; and a stout body. Its color is a uniform dark brown and a blackish tail. Though mostly nocturnal, beavers will come out during the day especially in fall when they are busy gathering food and preparing their dams and lodges for winter.



### FOODS

Beavers' diet varies with the season. In spring and fall, beavers eat woody and nonwoody vegetation. In summer, they eat mostly nonwoody plants, while they prefer woody plants in winter. Woody foods include the bark and new twigs of a variety of trees and woody vines from willows and cottonwood to oaks, hickories, sycamores, and wild grapevines. Nonwoody foods include corn, pond lilies, watercress, and many other herbaceous plants.



### LIFE CYCLE

Beavers live in family groups, called colonies, comprised of an adult male, female, and their yearlings and kits. Breeding begins in January and February, followed by a single litter of three to four young born in April to June. The young are weaned after about six weeks but remain with the family for about two years.



### HUMAN CONNECTIONS

Beavers are harvested for their fur, which is used in coats and trimmings. Some people enjoy eating beaver meat. In the past, beaver fur, meat, and oil were immensely important in attracting both Native Americans and European settlers to our region.

# Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



## FISHING

### Black Bass

Impounded waters and non-Ozark streams:  
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:  
May 22, 2021–Feb. 28, 2022

### Nongame Fish Gigging

Streams and Impounded Waters,  
sunrise to midnight:  
Sept. 15, 2021–Feb. 15, 2022

### Paddlefish

On the Mississippi River:  
Sept. 15–Dec. 15, 2021

### Trout Parks

Catch-and-Release:  
Nov. 12, 2021–Feb. 14, 2022

## TRAPPING

### Beaver, Nutria

Nov. 15, 2021–March 31, 2022

### Other Furbearers

Nov. 15, 2021–Jan. 31, 2022

### Otters, Muskrats

Nov. 15, 2021–Feb. 20, 2022

### Rabbits

Nov. 15, 2021–Jan. 31, 2022

*\*Only hunters selected through a random drawing may participate in this hunting season.*

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at [short.mdc.mo.gov/Zib](http://short.mdc.mo.gov/Zib). Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at [short.mdc.mo.gov/ZZf](http://short.mdc.mo.gov/ZZf).



## Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at [short.mdc.mo.gov/Zi2](http://short.mdc.mo.gov/Zi2).

## HUNTING

### Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.  
Open all year

### Crow

Nov. 1, 2021–March 3, 2022

### Deer

Archery:  
Sept. 15–Nov. 12, 2021  
Nov. 24, 2021–Jan. 15, 2022

Firearms:

- ▶ November Portion:  
Nov. 13–23, 2021
- ▶ Late Youth Portion (ages 6–15):  
Nov. 26–28, 2021
- ▶ Antlerless Portion (open areas only):  
Dec. 4–12, 2021
- ▶ Alternative Methods Portion:  
Dec. 25, 2021–Jan. 4, 2022

### Dove

Sept. 1–Nov. 29, 2021

### Elk\*

Firearms:  
Dec. 11–19, 2021

### Groundhog (woodchuck)

May 10–Dec. 15, 2021

### Other Furbearers

Nov. 15, 2021–Jan. 31, 2022

### Pheasant

Regular:  
Nov. 1, 2021–Jan. 15, 2022

### Quail

Regular:  
Nov. 1, 2021–Jan. 15, 2022

### Rabbit

Oct. 1, 2021–Feb. 15, 2022

### Sora, Virginia Rails

Sept. 1–Nov. 9, 2021

### Squirrel

May 22, 2021–Feb. 15, 2022

### Turkey

Archery:  
Sept. 15–Nov. 12, 2021  
Nov. 24, 2021–Jan. 15, 2022

### Waterfowl

See the Migratory Bird and Waterfowl Hunting Digest or visit [short.mdc.mo.gov/ZZx](http://short.mdc.mo.gov/ZZx) for more information.

### Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2021

### Woodcock

Oct. 15–Nov. 28, 2021



ILLUSTRATIONS: MARK RAITHEL



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on Instagram**

@moconservation

A typical scene on a November Missouri day — bare trees and a frosty body of water. You can bet it's probably chilly, too, but that sandhill crane is braving the elements. You should do the same! Get outside. You never know what you might discover.

📷 by **David Stonner**

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